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(Quoted from the Constitution)

"To promote the study and dissemination of knowledge of the cause, prevention and control of diseases of the teeth, their supporting structures and adnexa and related subjects; and to foster and promote a better scientific understanding between the fields of dentistry and medicine."

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FOCAL INFECTION

RUSSELL L. CECIL, M.D., *New York, N. Y.**

The original theory of focal infection as propounded by Frank Billings of Chicago, was to the effect that foci of infection in the tonsils, teeth, sinuses, and other sites, may produce disturbances in distant parts of the body, such as joints or kidneys, by means of a toxin, which presumably circulates through the blood stream. Such a toxin, however, has never been demonstrated. Foci of infection have been assumed to play a role in many diseases, such as arthritis, iritis, rheumatic fever, nephritis, heart disease and bronchiectasis. It is probably in connection with rheumatoid arthritis, however, that the theory of focal infection has been most intimately associated.

The microorganism most frequently involved in focal infection is the streptococcus, either hemolytic or viridans. However, any pathogenic microorganism can presumably play the active role. Every infection has an original portal of entry through which the pathogenic bacteria gain access to the body. The portal of entry may be the site of a very fleeting infection, such as an acute coryza or influenza; and it may be through a chronic focus, such as chronic sinusitis or an apical abscess in a tooth.

Many of us who originally accepted the theory of focal infection with enthusiasm have watched with interest and some trepidation its rapid development in the various fields of medicine but are now wondering if the time has not arrived for a revaluation of the whole theory. Many thoughtful students today question seriously its validity, and some are quite willing to throw it completely overboard. This is particularly true in Europe where the idea of focal infection has never met with enthusiastic acceptance. But even in America, the home of focal infection, scientific men are becoming a little wearied of the universal acceptance of a theory as though it were an established fact. For example, one of our leading pathologists has satirically described a focus of infection as "anything that is readily accessible for surgery." Another colleague remarked that the present medical epoch would probably go down in history as the "Era of Focal Infection."

In 1927 Cecil and Archer made a report on 200 cases of "Chronic Infectious Arthritis" with special reference to the incidence of focal infection. These patients had all been studied in the Cornell Clinic at some time during the preceding five or six years. Today, 10 years later, we would probably omit many of them as not fulfilling the criteria of rheumatoid arthritis. Infected tonsils were observed in 61 per cent, while infected teeth either alone or associated with other foci were noted in 33 per cent! Miscellaneous foci including infected sinuses were noted in 15 per cent of the cases. The tonsils were removed in 28 per cent of these cases as a therapeutic measure, but only one-half were cured or improved by the operation. Of the 21 cases that had teeth extracted, seven were cured and six improved. In this study on clinic patients, focal infections appear to have been very common and the removal of foci, especially when carried out early in the disease, seemed to produce beneficial results in a good proportion of cases. At that time these figures seemed striking and to have some significance, but in view of what we now know of the nature of arthritis, it is possible that a good many cases would have shown improvement even if the foci had not been removed.

Today we are faced with a different situation. Foci of infection are being rapidly disposed of by an army of energetic surgeons and dentists. Well might we ex-

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Read before the American Academy of Dental Medicine, Dec. 1948.

claim, "Where are the foci of yesterday!" Comparatively rare in private practice is the sight of a tonsil, either normal or diseased. How beautifully the teeth and gums are cared for! How unusual is the discovery of a neglected case of sinusitis! And yet we still have rheumatoid arthritis and rheumatism with us! Certainly, in spite of all we have learned about focal infection, arthritis is still a very prevalent disease.

A classic example of true focal infection is found in gonococcal arthritis. The posterior urethra becomes infected, with a subacute or chronic infection in the prostate or seminal vesicles. From time to time a few gonococci escape from the focus in the genito-urinary tract and when conditions of susceptibility are right, the metastatic infection appears in the joints.

The problem of establishing the relation of focal infection to arthritis is more difficult because of the uncertainty which exists concerning the etiology of arthritis. Indeed, in our opinion there is considerable confusion in the clinical identification of this disease, and many cases of arthritis are still being classified as "rheumatoid" which do not belong in this category.

A few years ago Angevine and I made an analysis of 200 consecutive cases of typical rheumatoid arthritis encountered in private practice. No case was included that did not fulfill the classic pattern of the disease. For example, every case in the series showed, or had shown at some time previously, several characteristic fusiform fingers which, in our opinion, are a typical manifestation of this syndrome. The sedimentation rate was accelerated in 93 per cent of these patients. The agglutination reaction with a strain of hemolytic streptococcus was strongly positive in 65 per cent.

In analyzing these carefully studied cases we found definite evidence of infection in 20 per cent and a questionable focus in 10 per cent of the cases. We were surprised to find that 70 per cent of the patients revealed no demonstrable focus of infection. This high figure is in part explainable by the fact that the oral hygiene of these patients had been so carefully supervised before they came under our observation. Contrast this with the high incidence of focal infection found in the clinic patients 10 years ago!

Only 19 cases gave a history of an acute infection of the upper respiratory tract such as coryza, pharyngitis or influenza preceding the onset of the arthritis. A smaller number of cases came on after psychic trauma, childbirth, puerperal fever, physical injury or operation.

The focal infections which we have encountered in this series fall into two groups. The first includes those patients that gave a history of treatment of a focus of infection before they came under our observation. The second group includes the patients who, at the time when they were seen by us, had what was considered to be a focus of infection. It is obvious that we cannot state with certainty how many foci in the first group were significant. However, it seemed of value to determine, if possible, the effect of removal of these foci upon the course of the disease.

The organ upon which the greatest attention had been "focused" was the readily accessible tonsil. The tonsils had been removed in 92, or 46 per cent, of the cases on account of arthritis although only about 15 per cent gave any history of tonsillitis or sore throat. The operation had no effect upon the course of the disease in 86 cases, and caused a severe exacerbation in two instances. There was temporary improvement in four cases. In no instance was the course of the disease arrested or the patient cured. In one instance the operation upon infected tonsillar stumps appears to have been the precipitating cause of the onset of the arthritis.

The problem of infection of the teeth and gums is a difficult one. Fifty-two patients had had some, and in many instances all, of their teeth extracted on account of arthritis. There was no benefit in 47 cases, and three patients reported a flare-up of the pain in their joints following tooth extraction.

The sinuses received less attention. Thirty cases gave a history of sinus disease, and 12 had been treated for sinusitis on account of arthritis before coming under our observation. The treatment was of no benefit in 10 cases and in two there was an exacerbation of the disease.

When first seen by us 27 patients had what was considered to be an infection of the tonsils or remaining tonsillar stumps. This diagnosis was confirmed in most instances by a rhinologist. Twenty of these cases were treated; 13 remained unimproved or became worse, and there was temporary improvement in only 7 cases. This improvement lasted from one week to several months.

At the time of examination only 11 of the 200 cases gave evidence of an active sinus infection. Five of these cases were treated, all without benefit.

The group of patients seen by us had exceptionally fine teeth, and most of them had had periodic dental examinations so that few infected teeth were found. In only three cases was additional dentistry performed. There was no benefit reported in any of these cases.

The experiments of Krause, Willis and Freund with tubercle bacilli, and more recently those of Angevine with hemolytic streptococci have shown that if bacteria are injected into a previously sensitized animal, they are fixed at the site of injection and show little tendency to disseminate from the original site. If this fact is applicable to foci of infection, one would expect little, if any, dissemination of bacteria from a well established focus.

It is a well known fact that arthritis can be readily produced in rabbits by the intravenous injection of almost any strain of streptococcus. We have used a strain of hemolytic streptococcus which, when injected intravenously in small doses (2 cc.) produced an arthritis in about 85 per cent of the injected animals. Arthritis appeared in one or more joints between the fourth and thirteenth day and often persisted for many months.

Using the same organism we have attempted to create foci at various selected sites. The dose of streptococcus was usually larger than that used for intravenous injection. In some animals single foci, and in others multiple foci were established. The following methods were used:

1. Suspensions of bacteria were injected into the following structures: the gingivae, sinus, prostate, testes, eye, pleural and peritoneal cavities, joints and skin.
2. Segments of the uterus and Fallopian tubes were isolated by ligature and injected with streptococci.
3. The renal pelvis was injected after ligation of the ureter.
4. The gall-bladder was injected after ligation of the cystic duct.
5. The animals in one group were fed large doses of streptococci over a considerable period of time.
6. Pledgets of cotton were soaked with streptococci and packed firmly into the nares where they remained for several weeks.

Blood cultrues were taken in most animals at intervals of 1, 6, 24 and 48 hours after the infecting dose was given. Bacteria were usually not recovered from the blood after 48 hours. The result of these cultures gave us an indication as to how many microorganisms entered the circulation. By following the sedimentation rate and agglutination titer of the blood we were also able to obtain some evidence as to how long the focus of infection persisted. The greatest difficulty was to keep living organisms in a focus for any considerable length of time. The animals were watched daily for the development of arthritis. They were occasionally killed when arthritis appeared but were kept in most instances for a period of two months. At the time of autopsy the focus was cultured to determine whether the injected organisms were still present; in most instances it was sterile. We were successful in establishing a focus in the eye so that we were able to recover organisms for as long as 30 days after a single intraocular injection. However, arthritis developed in only one instance in this group, and it appeared within six days.

Arthritis developed in only 11 of 100 rabbits. It was observed most frequently

in those animals which had received injections into the gums, and sinuses. The arthritis observed clinically was confirmed at autopsy by both gross and microscopic examination.

From these studies the following conclusions were drawn:

1. Arthritis was produced in only 11 of 100 rabbits when injected by other than the intravenous route. To accomplish this it was necessary to use large doses of a suitable strain of streptococcus as well as a most susceptible animal.

2. Arthritis developed only in those animals from which streptococci were recovered from the blood stream shortly after injection.

3. In rabbits the gums were a particularly favorable site for the absorption of bacteria.

4. Repeated injections of bacteria caused no more arthritis than a single injection.

5. It was difficult to establish a chronic persistent focus of infection in rabbits.

In my introductory remarks I have stressed the popularity of the focal infection theory and how this popularity has led to its very wide application in the modern practice of medicine and surgery. Indeed, focal infection has become such a fetish that the specialist feels almost duty bound to discover a focus in his chosen field when the internist, in search of a diagnosis or an explanation for certain symptoms, turns to his specialized colleague for help. This is particularly true when we attack the problem of arthritis. How often in a particular case, the internist learns from the rhinologist that the antra or ethmoid cells show a slight increase of secretion and probably are the seat of a low-grade infection. If the internist goes further in his search, the urologist may report the prostate somewhat boggy with a few leukocytes and cocci in the expressed prostatic fluid. He suggests the possibility of a low-grade infection and perhaps recommends prostatic massage. When we turn to the oral surgeon, there may be still more uncertainty. "Several of the teeth are devitalized, the gums are retracted, and there are changes in the periodontal membrane." The dentist suggests such teeth are a possible source of infection and probably should be extracted.

The reaction of the internist to these reports from specialists will vary according to his own platform concerning focal infection. If he is radical, he will have everything of an even suspicious nature removed. If he is conservative, he may ignore these reports completely and treat the patient instead of the focus.

The point we wish to stress, however, is that in the final analysis, these decisions should be made by the internist rather than by the specialist, and physicians should exercise a more conservative attitude regarding the treatment of tonsils, teeth and sinuses in rheumatoid arthritis than they have in the past.

An obvious focus of infection should usually be removed, provided the health of the patient permits such removal without too much risk of disaster. If the tonsils are inflamed, it is better to wait several weeks until the activity of the infection has subsided before removing them.

The same applies to all operative procedures in the presence of the various acute infectious diseases, especially rheumatic fever. If many teeth are infected only one or two should be extracted at a time. A great many patients should receive a transfusion of blood before operation. In arthritis it may be wise to remove tonsils which are diseased and to treat active sinus infections, not because of their proved relationship to the arthritis, but because anything which improves the health of the patient will probably be of some benefit in overcoming the arthritis. The decision regarding removal of a focus of infection must usually be made eventually by the internist after consultation with the laryngologist and the dentist.

33 East 61st Street

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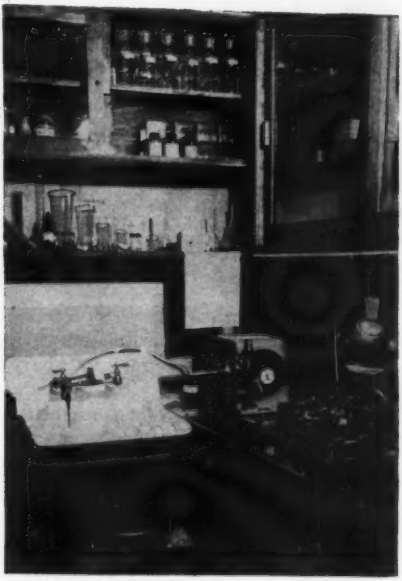
RESEARCH IN PERIODONTIA

The Periodontia Department of New York University College of Dentistry has been enhanced by the establishment of its own research laboratory. This was made possible through a research fund established by previous postgraduate students in Periodontia under the chairmanship of Sam Robbins of Cleveland. A very fine Bausch & Lomb Binocular microscope was contributed by Sidney Sorrin, associate professor. Samuel Charles Miller, Professor and Chairman of the Peridontia Department has placed Louis R. Burman, assistant professor in charge of research for the Department. Complete facilities have been made available for histologic, cytologic and hematologic studies.

Many pertinent problems have already been started and are well under way. Two research fellows, Alexander Soberman and S. Sigmund Stahl have been appointed to the staff. Both have excellent training in this field. Undergraduate and postgraduate students with special aptitude for research are being permitted to perform projects under supervision.

1. Presentation of microscope for research laboratory. L. to R. L. R. Burman, in charge of research; S. Sorrin, Donor; S. C. Miller, Chairman of Periodontia Department



2. View of corner of research laboratory

CANCER OF THE GINGIVAE: A CASE REPORT

The Need for Dento-Medical Cooperation*

SIDNEY SORRIN, D.D.S., F.A.C.D., *New York, N. Y.*†

As dento-medical understanding has progressed, more interest is being manifested in the need for closer cooperation between these two healing arts. Unfortunately, few medical colleges have included in their curriculum a course of lectures better to acquaint the physician with our mutual problems. As a result, the physician is not fully aware of the aid which the dentist can render in the diagnosis, etiology and treatment of disease. On the other hand, the dentist is cognizant of the great assistance which the medical profession can render to the dental patient and uses this information daily in his practice. Courses in dental medicine must become a reality if the patient is to receive adequate medical care. Some hospitals have realized the necessity of closer cooperation and have included the dental departments as an important part in the management of their cases. It is hoped that every hospital will require a detailed dental report of every admission so that a *complete* medical history can be obtained. It is regretted that the physician, anxious though he is for the dental picture, is not prepared in his medical education fully to appreciate the true worth of the dental evaluation of the case.

Too often, when the need for dental advice is sought, the medical practitioner requests the roentgenograms of the particular case apparently for his study. This immediately places the physician at a disadvantage, for the roentgenogram is only an *aid* to *dentists* in arriving at a diagnosis of the case. The physician must rely on the dentist's findings based on a complete study of his patient, rather than request the roentgenograms. A study of the conditions of the oral cavity, which includes health or disease of the epithelium, the periodontal pockets, mobility of the teeth, color of the tissues, traumatic occlusion, is more important in many cases than merely the roentgenographic picture of the case. Often a roentgenographic study will reveal no pathosis, yet dental disease is apparent in the clinical examination. This condition is present in the case which is described here.

Cases of periodontal pockets, temporomandibular pain, necrotizing ulcerative gingivitis and many oral inflammations are not observed in the roentgenographic pictures. The error of both physician and dentist lies in placing too much dependence on the roentgenographic picture and not enough reliance on a more complete dental examination.

Many times, after complete evaluation of the dental picture, which includes the oral and roentgenographic examination, the dentist realizes that a systemic work-up is necessary because of the nature of the diseased processes in the mouth. He will then consult with the physician and suggest the need of such information and may even request certain tests. This request often is not taken too kindly by the physician and the dentist is criticized for attempting to practice medicine.

Fortunately, the dentist of today has an excellent background of medical knowledge, and is fully prepared to discuss with the physician the reason for his request for complete medical examination. This includes the various tests as blood count, urinalysis, basal metabolism, calcium and phosphorus determination, sugar tolerance, cholesterol, etc., in addition to the routine office exmaination. The time has long passed when the dentist was considered merely a mechanic and not interested in the general welfare of his patient. As a matter of fact, many

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† Associate Professor of Periodontia, New York University College of Dentistry.

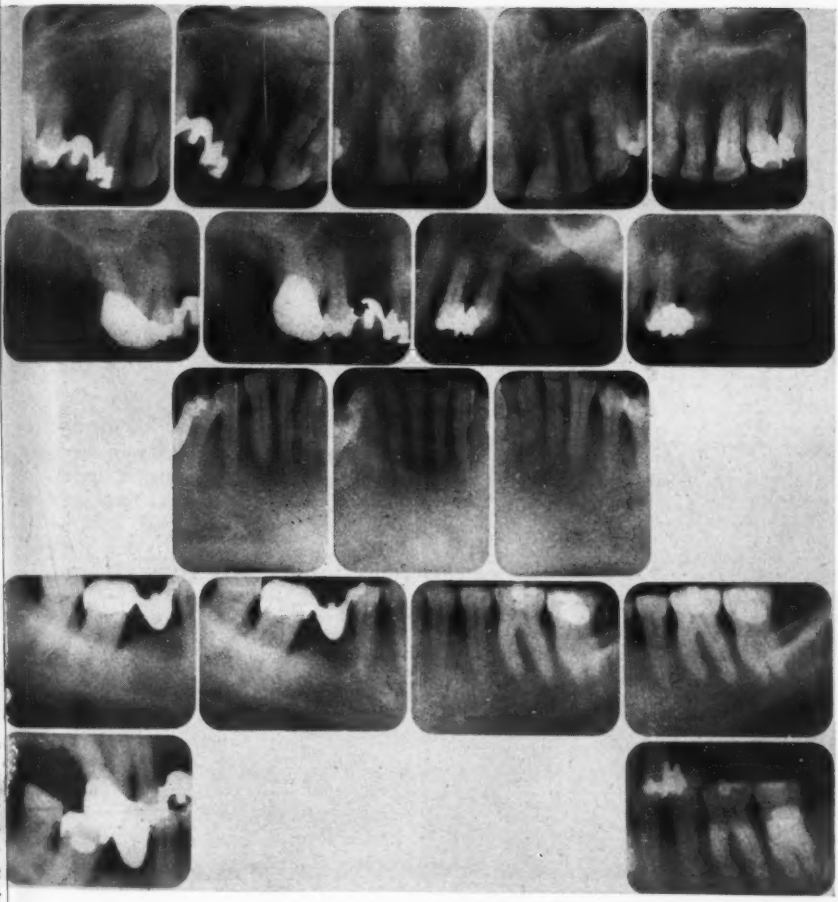

Fig. 1.—Roentgenographic series of the case. Note the bone loss present throughout the mouth. However, there is no roentgenographic evidence of any serious disorder. The bone about the lower right mandibular teeth is in good condition.

failures in dentistry in the past have resulted from treating the mouth as an individual unit rather than a part of the entire body.

Orthodontists, periodontists, oral surgeons, prosthodontists, endodontists and general practitioners as well, have all experienced failures because the condition in the mouth was simply a manifestation of a serious systemic disturbance. Some of these systemic conditions revealed locally are blood dyscrasis, endocrine disturbances, dietary indiscretions, psychogenic factors, gastrointestinal diseases and many other systemic conditions which present signs in the mouth.

The need for close cooperation between physicians and dentists is recognized in this case report. Differences of opinion and careful check of oral diagnosis by both dentists and physicians are encouraged.

Fig. 2.—Leukoplakia of cheek and palatal gingivae.

Fig. 3.—Leukoplakia of dorsal surface of tongue.

REPORT OF THE CASE

History: 1) Mrs. S. 60 years of age presented herself on January 7th, 1948 with a case of periodontal disease (Fig. 1) over which was superimposed areas which resembled leukoplakia. These areas appeared in the left cheek, dorsum of tongue, undersurface of tongue extending to the floor of the mouth, left palatal region, and the bucco and linguogingival areas of the right mandibular cuspid, premolar and first molar areas. Fig. 2-3-4-5.

2) These conditions had been observed by the patient within recent date. Patient had never smoked, partaken of liquor or used mouth washes.

3) The patient was being treated by a physician for the oral symptoms of the application of silver nitrate.

4) On her regular visit to the dentist Dr. S., he became alarmed by all of these signs and referred her to the writer.

5) A complete history including photographs, roentgenographic series and casts were taken. Patient was dismissed for a week to determine whether the use of silver nitrate had not been a factor in the etiology.

6) On January 15th, 1948 there was no improvement and the case was referred to a dermatologist for his diagnosis. A telephone communication indicated his diagnosis as monilia and patient was placed under his treatment for three weeks. He prescribed a mild boric acid mouthwash and 10 per cent hydrochloric acid internally.

Treatment: 1) We observed the case on February 9th, 1948 and noting no improvement, we consulted with the physician and received permission to commence periodontal treatment.

2) Our first treatment on February 16th, 1948 consisted in mild prophylaxis and the application of 2 per cent acriviolet to the areas.

3) On February 17th, 1948, we reexamined the area on the lingual gingival surface of right mandibular cuspid, premolar and first molar areas, because of tenderness, color of the gingivae and the marked mobility of the first and second premolar teeth. A biopsy was taken of the soft tissue.

4) On February 19th, 1948, acriviolet was applied to all the areas and another biopsy was taken of the marginal gingivae *buccal* to the mandibular premolar teeth of right side.

5) On February 20th, 1948, a report from Dr. Darlington revealed squamous cell epidermoid carcinoma, Fig. 5.

Fig. 4.—Leukoplakia of undersurface of tongue.

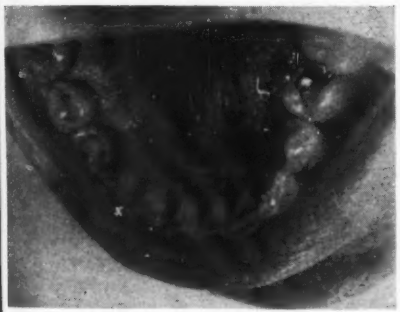

Fig. 5.—Pearly grey appearance of linguo-gingival area of right mandibular teeth. Note also similar area on floor of mouth.

6) February 20th, 1948—Consultation with the dermatologist, original dentist and Dr. Darlington, resulted in decision to refer the patient for X-ray and radium treatment.

7) Febraury 26th, 1948—Dr. William Harris confirmed diagnosis of carcinoma of the gingvae and biopsy of other regions revealed hyperkeratosis and changes consistent with leukoplakia. All teeth were extracted and X-ray and radium treatment began.

8) May 4th, 1948—Report from Dr. Harris was to the effect that X-ray and radium therapy was completed and reactions had subsided. There was no gross evidence of disease in the gingivae of the right mandible. At no time was there any evidence of enlarged palpable lymph nodes in the neck.

9) In July, 1948 the patient reported to the dentist for full upper and lower dentures.

MICROSCOPIC DESCRIPTION

In this section, sheets of anaplastic cells derived from epithelium, ramify without restraint in subsurface tissue. Basement membranes are violated. As a result there is disorganization of the relationship between the two basic tissues (epithelium and mesoderm). Growth density of the invading cells is great. Some maturation occurs, however, i.e., bastard keratin is formed and a few scattered pearls. There is obvious surface slough and inflammatory reactions are carried deeply into the specimen.

PATHOLOGICAL DIAGNOSIS

Squamous cell carcinoma, Grade II to III.

(From the Report of Dr. Charles Darlington).

745-5th Avenue

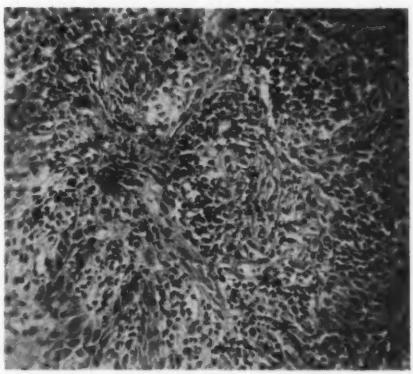

Fig. 6.—Photomicrograph of linguo-gingival tisue of right mandibular teeth.

FOCAL INFECTION AND EYE DISEASE (ABSTRACT)*

By CONRAD BERENS, M.D., *New York, N. Y.*

That there is frequently a connection between focal infection, whether dental or otherwise, and certain types of eye disease seems to be established beyond reasonable doubt. Also the beneficial effect of removal of foci on these eye diseases in a large number of cases is unquestioned. Much work still needs to be done to clarify certain aspects of the problem. That possible focal relationship is a serious matter is shown by the fact that uveitis, one of the diseases often related to focal infection, is responsible for at least 12 per cent of cases of blindness in the United States.

Dental infection is a common source of focal infection in cases of eye disease, although in my experience, sinusitis shows a higher percentage of causal relationship. Eye diseases which have been attributed to dental pathology include: uveal disease, retinal detachment, optic nerve involvement, papilledema and papillitis, glaucoma, orbital phlegmon, retrobulbar neuritis, muscle paralyses, lens and vitreous opacities, chorioretinitis of the macula, corneal ulcer, keratitis and ophthalmic phlebitis. Kravitz in 1940 said that "there seems to be no type of eye infection which cannot be caused by dental infection." Of these types, uveitis is the disease most commonly encountered.

One of the most confusing phenomena in disease of suspected focal infection origin is the failure of the case to show improvement after foci have been removed or cleared up by treatment. This difficulty is encountered in the field of nose and throat pathology as well as in that of oral infections. In the dental field the following reasons can be adduced in explanation of such failures:

1. Diagnostic failures, with consequent failure of dental therapy (these failures relate chiefly to failure to obtain full mouth roentgenray series and imperfect interpretation of the films), failure to check sterility of pulpless teeth before filling, failure to recognize possible infection in so-called X-ray negative teeth and in rarefied edentulous areas;
2. Persistence of an interdependent focus as in sinuses, tonsils and prostate;
3. Inability of the patient to respond to therapy because of lowered immunity and resistance;
4. Irreversible ocular pathology.

The bacteriology of dental foci of infection has shown a great preponderance of streptococci as the responsible organisms. Non-hemolytic streptococci including the streptococcus viridans have been reported most frequently. Goldberg reported in 1938 the following distribution in 426 positive apical cultures:

Streptococcus nonhemolyticus	335
Streptococcus hemolyticus	12
Staphylococcus albus (contamination)	18
Enterococcus	3
Vincent's spirochetes	6
Fusiform organisms	1
B. Coli	1
No growth	48

These organisms for the greater part are also found in sinus and throat infections. In these cases it is not uncommon to find coliform bacteria along with the streptococci; their presence is regarded as having considerable significance in producing eye pathology because of clinical experience and animal experimentation.

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* Read before the New York State Section of the American Academy of Dental Medicine, January 21, 1949.

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b) Professor of Clinical Ophthalmology, New York University College of Medicine.

This abstract was prepared with the assistance of John Oppie McCall, D.D.S.

Because of lowered immunity it is often necessary to use vaccines in connection with removal of foci of infection in order to obtain satisfactory results in treatment. This is often needed, too, because of the difficulty frequently encountered of getting complete elimination of infection from sinuses and adjacent areas of the upper respiratory tract.

Dental conditions which have been found apparently to be causative factors in eye pathology include: impacted and malposed teeth, devitalized teeth (these are very important), caries (if deep seated and causing low grade pulp infection), periapical disease, rarefying osteitis, radicular cysts, periodontal disease, retained roots, and residual infection.

There has been much controversy as to whether there is a sound basis for the focal infection theory. Cecil, in connection with arthritic etiology, after embracing this theory and applying it in practice for years, has stated that he thinks focal infection has relatively little influence on these cases. It is true that there are loop holes, yet bacteriologic and clinical evidence in innumerable inflammatory eye diseases forces the conviction that in this field focal infection must be taken seriously. Certainly when the patient has a serious eye disease which may produce blindness it is unwise to permit dental infection to remain in the jaws. The tooth is less valuable than the eye.

708 Park Avenue

BURNING SENSATION OF TONGUE*

***To the Editor:*—A patient, 37 years old, has had good general health. She is high strung and becomes excited easily. Six weeks ago she complained frequently of a burning sensation on the lower lip. This soon involved the tip of the tongue. Her tongue felt as if she had eaten some spicy or hot food. She was not anemic. Examination of the tongue and lips was negative. Thinking that she might have gastric hypoacidity and thiamine deficiency I gave her a prescription containing hydrochloric acid and nicotinic acid. This did not seem to change her complaint. Gastric analysis was essentially normal and did not indicate hypoacidity. Burning sensation now involves the entire tongue, and she feels a hot burning sensation down the pharynx to the esophagus. I have treated her with diphenylhydantoin sodium without results and have also given her bromides for nervousness. She has stopped smoking. I would appreciate suggestions.**

M.D., Missouri.

ANSWER.—The impression of psychoneurosis is possibly correct, with local irritation of some sort to be ruled out as a cause or associated factor. The bilateral, progressive burning sensation of the lip, tongue and throat, in a nervous woman of 37, in the absence of visible inflammation, anemia or response to therapy suggests an abnormality which may be present in a situational neurosis, menopause, hysteria or phobia.

Infection, gastrointestinal and systemic disorders and allergy seem to be excluded; the site is correct for the last named, but the constancy is against it. Local causes could include an irritant food or beverage, an irritant mouth wash, excessive smoking and new dental work (with a difference of electric potential between dissimilar fillings).

Several measures could be tried after consideration of the previous suggestions. A continued ban on smoking, restriction to bland food and drink; the use of a dilute bland or astringent mouth wash, reassurance, in case of cancerophobia, ½ grain (80 mg.) of phenobarbital three times a day and observation to note an obscure cause are suggested. If the dosage of nicotinic acid was not high, she might be given 100 mg. of nicotinamide orally per day for two weeks. If the burning is associated with dryness, it has been suggested that a trial of neostigmine bromide (7.5 mg. three times a day after meals) will increase the secretions and burning. If the case seems functional, obtain the help of a neuropsychiatrist.

* From J.A.M.A.: 139:343, Jan. 29, 1949.

PHYSIOLOGY OF THE PULPLESS TOOTH:
Is the Pulpless Tooth a Dead Tooth?

M. B. AUERBACH, D.D.S., *New York, N. Y.*†

The statement is often made that a pulpless tooth is a dead tooth, a foreign body. The claim is that this dead tooth is more susceptible to decay than a tooth with an intact, vital pulp. "Dead teeth" are very brittle and dry and much more susceptible to fracture than "normal" teeth. It is even said that a pulpless tooth cannot withstand normal biting pressure. It is sometimes added that the total biting pressure is reduced by the presence of pulpless teeth in the mouth.

The implication of all these statements is that the pulpless tooth is very different from the vital tooth, when the truth is that a pulpless tooth performs the same function as an unaffected tooth. Its physiology is only slightly altered. It performs a full role in aesthetics, speech and mastication. It continues to maintain the continuity of the arch. It continues to function as a force in the development of the jaw and the masticatory apparatus. It allows for the maintenance of a healthy periodontium.

PHYSIOLOGY

Both pulpless and vital teeth have vital and non-vital tissues. Let us compare the physiology of the enamel,* dentin, cementum and periodontium in both.

There are these possible pathways for tooth metabolism:

1. The pulp.
2. Junction of cementum with enamel and dentin.
3. Junction of enamel and the oral cavity—saliva bathing the tooth.

Wasserman, Blayney, et al[1] have presented some very significant experimental material concerning the metabolism which takes place through these pathways. Their experiments consisted of either the removal or injury of the pulp, followed by the covering of the tooth with a metal cap or crown to isolate the enamel from the saliva. The supply of tissue fluids to the tooth via the pulp or by the saliva could now be prevented. This left only the cementodentinal route open. Using radioactive phosphorus as tracers, they found that the pulpless tooth continues to take up phosphorus by way of the cementodentinal junction.

In evaluating their material they comment that the real value of the activity of cementum is the same in a normal tooth, pulpless tooth or a tooth with an injured pulp.

The cementum is a tooth structure which has the least physiological relationship with the pulp. Physiologically, it is tied to the periodontium. It has been shown experimentally that cementum is affected to little or no extent by damage to or removal of the pulp. However, periodontal damage does affect the vitality of the cementum. Because this vital cementum[2] is not affected by pulp removal, enamel retains a spark of metabolism, and dentinal tubuli continue to have tissue fluid in them. A pulpless tooth remains a vital tooth—not a dead tooth.

In a pulpless tooth, the cementum continues to deposit new layers of cementum. This maintains the integrity of the epithelial attachments and the dynamic adjustments of the periodontal membrane to tooth movements in mastication. The cementum also acts as a reparative agent. It can and does seal off the apex of the treated tooth. These functions of the cementum are of extreme significance to the health of the dental structures.

The removal of the pulp and the proper filling of a root canal is soon followed by connective tissue repair. First

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there is scar formation, then cementum is deposited. This phenomon is comparable to a scratch on the skin. First there is connective tissue scar formation, then there is epithelial proliferation over this. In the case of root therapy, cementum is the tissue that proliferates.

Kronfeld[3] reports from findings in human teeth extracted at short intervals after pulp canal therapy that the deposition of cementum begins several weeks after the operation. From this time on the deposition of cementum continues slowly. The cementum tends to fill any spaces, obliterating the lumen of the canal, and even covering over the end of the root canal filling in some cases.

Blayney,[4] Coolidge,[5] Weaver,[6] Hatton[7] et al, and others report that cementum may be deposited upon the root end and in the unfilled portion of the root canal. Cementum will cover the root canal filling material and will obliterate any lumen remaining at the apex. They indicate that this process occurs only if infection is not present.

Complete pulp canal therapy may produce many degrees of inflammation in the periapical tissues. It may vary from little or no disturbance in certain favorable cases, to considerable laceration and injury in other cases, particularly those with wide periapical foramina. The process of inflamation is initiated and follows its course. The succession of events involves the resorption of necrotic tissue and the restoration of the elements damaged by previous pathology or by necessary operative procedures. Coolidge[5] reports that in the stage of resolution of the necrotic tissue, some of the dentin and cementum of the root and the lamina dura of the surronuding alveolar bone may be resorbed in the manner of irregular enlargements. In the stage of repair new layers of vital cementum are produced and the continuity of the lamina dura restored. When the crown of the treated tooth is restored mechanically, the normal functional stimulation results in the development of a normal, healthy periodontal membrane.

Sometimes there is the formation of excess cementum. Kronfeld[3] points out that such a hypercementosis is not in itself a pathological condition. Rather it is reparative and protective. As such it serves a useful purpose.

With the cementum alive and performing its reparative function, with the periodontal membrane intact, the tooth is a live, healthy, functioning member of the masticatory apparatus. The pulp, a possible source of infection, has been removed. The properly treated pulpless tooth can perform as well as a vital tooth. It is just as vital in terms of function. Thermal response is no longer present, the pulp is no longer present to carry sensations of pain. The tactile sensations transmitted by the periodontium remain unaltered.

It is difficult to imagine how biting pressure is reduced in a treated tooth with healthy periodontal tissues. Biting pressure is proportional to the tolerance of the periodontal tissue.

FRACTURE OF PULPLESS TEETH

When the fracture of part or all the crown of a pulpless tooth occurs the blame is placed on the fact that the tooth is "dried out" and brittle. In our mind, it is more likely due to the undermining of the enamel walls during the process of gaining access to the root canals. This will happen in any tooth in which enamel is undermined. Teeth that have been treated warrant coronal protection by means of crowns or onlays.

SUSCEPTIBILITY TO CARIES

Then there is the question of the susceptibility of pulpless teeth to caries. Secondary dentin can no longer be formed when the pulp has been removed. To this extent it may be said that a pulpless tooth has less of a chance to defend itself against a carious lesion. However, the purpose of secondary dentin is largely to protect the pulp. In a treated tooth we have no pulp that needs protection. It is certainly not critical to protect a root canal filling.

The presence or absence of the pulp is not an etiological factor in the incidence of caries. This is substantiated by the work of Feldman and Lefkowitz.[8] They examined a large number of roentgenograms of pulpless teeth for proximal caries. They found that the incidence of caries in pulpless teeth was no greater than in vital teeth. In fact, the incidence was slightly lower in pulpless teeth.

The art and science of pulp canal therapy has arrived at a point where no tooth need be extracted simply because of pulp involvement. A tooth treated by modern, aseptic methods—restored to function, is a masterful achievement in surgery and therapeutics.

One Hanson Place

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FLUORIDE IN PREVENTION OF DENTAL CARIES*

***To the Editor:*—Fluorides are said in some publications to cause mottling of the dental enamel, and in others sodium fluoride is recommended as a topical application to preserve the enamel. Will you explain these conflicting statements?**

Narcisse Francis Theberge, M.D., New Orleans.

ANSWER.—Mottled enamel, or endemic dental fluorosis, is caused by the continued use of a domestic water containing excessive amounts of fluorides (more than 1.5 parts per million of fluoride) during the period that the permanent teeth are calcifying. With the exception of the third molar this represents about the first eight years of life. This defect is developmental; in a person moving into an endemic area after the permanent teeth have erupted the enamel does not become mottled. Numerous epidemiologic studies attest the quantitative relationship between the use during the susceptible period of a domestic water supply containing excessive amounts of fluorides and the prevalence and severity of the resultant endemic dental fluorosis.

As a result of later epidemiologic studies demonstrating the decided inhibition of dental caries among users of domestic waters containing 1 part per million of fluoride or over, a number of studies have been directed to the utilization of the relationship between fluorine and dental caries for dental control procedures. One of these methods is the topical application of a 2 per cent aqueous solution of sodium fluoride following prophylaxis. Studies completed indicate that after four treatments, spaced about a week apart, a reduction of the order of about 40 per cent may be expected in the incidence of dental caries in the group. Topical application studies so far have been largely limited to children; further studies are needed to determine whether or not it is effective with respect to adults. In teeth treated with topical applications of sodium fluoride solutions the enamel does not become mottled.

The mechanism by means of which fluoride inhibits dental caries is not known. Hodge and Sognnaes (Experimental Caries and a Discussion of the Mechanism of Caries Inhibition by Fluorine, in Dental Caries and Fluorine, American Association for the Advancement of Science, 1946) offer the following hypothesis:

"Fluoride is adsorbed or bound in combination in enamel or in dentin and, probably of most importance, on the surface of the tooth, thereby (1) lowering the solubility of the calcified part; (2) giving a relatively high local concentration of fluoride which inhibits those bacterial or enzymatic processes that otherwise are believed to dissolve the protein and the calcified material; (3) changing the salivary milieu as shown by the L. acidophilus counts. There are probably some systemic actions of fluorides partly responsible for the caries inhibition; these are unknown at present."

* From J.A.M.A.: 139:344-345, Jan. 29, 1949.

A NEW VASO-PRESSOR AGENT WITH NOVOCAINE FOR THE CARDIAC PATIENT

HUNTER L. HARANG, D.D.S., F.I.C.A., *New Orleans, La.*

The oral surgeon of today can offer his patients many services which will lead to restoration of function and comfort in and about the oral cavity. However, these same services are sometimes denied those patients who are handicapped by cardio-vascular diseases. The purpose here is to present an analysis of both local and general anesthetic agents which may be safely used for those cardiac patients who demand anesthetics for oral surgical procedures lasting over one hour.

This study is based upon the choice of anesthetics to meet the demands of over one hundred patients presenting various changes in their electrocardiograms. The importance of selection of an anesthetic agent for these patients is great and particular attention is given to the selection and application of vaso-pressors.

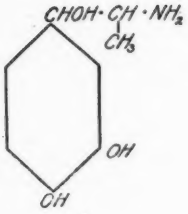
With the synthetization of procaine hydrochloride by Einhorn in 1905, it was believed that the ideal local anesthetic agent was found, as it was only one-seventh as toxic as cocaine. However, due to its solubility in the tissues, procaine is readily absorbed and is rapidly carried away. This physiological property demanded the use of an agent acting in synergism to produce prolonged anesthesia. It was unfortunate that adrenalin was chosen for this task, for it unjustly added criticism to procaine. It has been proven many times since Widenhorn and his associates[1] experimented with novocaine and the electrocardiogram that novocaine does not produce changes in the electrocardiogram.

The increasing present day demand for intravenous novocaine in the general anesthetic armamentarium has given us such valuable statistics as the "procaine unit," (4mg. procaine per kilogram body weight in twenty minutes) as described by Graubard and co-workers.[2] Tovell and Barbour report in their experiences with intravenous procaine[3] repeated beneficial effects resulting from small doses of novocaine upon cardiac action producing a normal rate and regular rhythm. The clinical application of intravenous novocaine proves that it may be used in small doses of weak percentages with benefit rather than harmful side effects. However, the use of nerve block anesthesia without a vaso-pressor drug for oral surgical procedures will not produce prolonged anesthesia necessary for the manipulation of tissues.

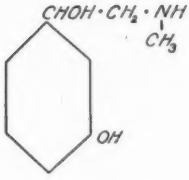
The present lack of knowledge of vaso-pressors by the cardiologist and the internist is evident by their persistent demands that novocaine be given without adrenalin. Many years ago symptoms such as palpitation, tremor, nausea, headache, and collapse presented by patients during and following injections of novocaine were due to the adrenalin and not the novocaine. The present day use of less toxic vaso-pressors has eliminated those unpleasant side effects. However, in a few instances, unfortunately, patients occasionally have weak spells and faint in the dental chair. Immediately the patient is thought to be sensitive to either novocaine or adrenalin. However, when these cases are referred for general anesthesia, with a diagnosis of "heart trouble," a history usually reveals that the syncope was due to inaccurate nerve block with resultant pain upon manipulation of tissues.

PHARMACOLOGY OF VASO-PRESSORS

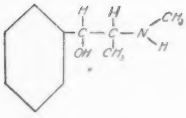
The available vaso-pressor agents currently employed for spinal and local anesthetics are the related amines: ephedrine, neo-synephrine, propradine, epinephrine, methedrine, and cobefrin. Their molecular structures are similar and so are their physiological actions, many of which produce side effects which are undesirable.



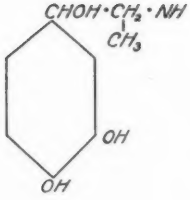
Epinephrine



Cobefrin



Ephedrine



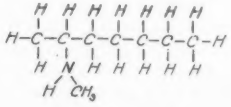
Neo-Synephrin

The never-ending search for a vaso-pressor, devoid of side effects, for use with novocaine, brought many new drugs into the experimental and clinical investigational stages. In their report on the study of cobefrin, Miller and Stuart[4] proved that this drug fulfilled many of the requirements for the ideal vaso-pressor. Cobefrin has risen to meet the present dental anesthetic demands. However, for those patients who suffer cardio-vascular damages there is a still safer vaso-pressor which may be employed.

A NEW VASO-PRESSOR

The introduction of a new vaso-pressor drug with a structural formula differing radically both in structure and action has been employed with much success since Jackson described the pharmacological action of 2-methyl-aminoheptane (Oenethyl) as a vaso-pressor agent.[5]

This drug has opened a new field in nerve block anesthesia for the use of novocaine for the cardiac patient. Oen-



Oenethyl

ethyl has been employed successfully in combating hypotension in spinal and general anesthesia in the cardiac and aged patients. It does this without the side effects which usually accompany the present vaso-pressors. It has been administered intravenously under general anesthesia to patients with known electrocardiogram changes. There was no change in heart rhythm or no side effects.

SUMMARY

Dental surgery patients who have a cardiac disturbance sometimes present a problem to the anesthetist. This study attempted to show how that problem may be solved. It has been conclusively shown that a safe anesthetic agent, both local and general, can be selected for the cardiac patient who must receive dental surgery.

Before the anesthetist chooses an anesthetic agent he should receive reports from the cardiologist, internist, and the surgeon. This report should include a complete survey of the heart, circulatory, respiratory, and urological systems, with blood analysis and liver function test. The surgeon should determine the extent of the surgical procedure and give an estimate of the time and amount of blood loss.

This study points out a combination of drugs which has been employed and has proved very satisfactory in dental surgery cases with cardiac disturbances.

It is concluded here that as a general anesthetic, the use of sodium pentothal in concentrations of 1% or less with sufficient oxygen is the general anesthetic of choice for the cardiac patient.

The availability of Oenethyl as a new vaso-pressor drug, used with novocaine and pontocaine, allows prolonged and profound nerve block anesthesia without the undesired side effects. Therefore, it is the answer for a local anesthetic for dental surgery on cardiac patients.

825 Maison Blanche Bldg.

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A DEVICE TO AID IN TOOTHBRUSH INSTRUCTION

J. Lewis Blass, Ph.G., D.D.S., F.A.C.D.*

Integrated muscle-nerve guidance is possible by the use of a new device which permits the dentist's control of the toothbrush in teaching a brushing technique. Since the use of the toothbrush requires a combined arm-and-hand movement, skill in brushing requires the patient to learn this movement as a supplement to the steps in applying the brush.

In teaching toothbrushing, the best start will be found in a discussion of the benefits which follow the use of a scientific method. These are improved gingival and tooth appearance, heightened gingival color and tone, decrease in gingival bleeding and deposits, protection from tooth and tissue abrasions and freedom from embarrassment of unpleasant breath. These personal benefits are side-effects of the positive massage, stimulation of circulation and removal of debris insured by proper toothbrushing.

An effective routine for teaching toothbrushing consists of:

Demonstration by the patient to diagnose his defects in brushing.

Demonstration of the correct method on casts or on a large model.

Demonstration in the patient's mouth while he observes in a mirror.

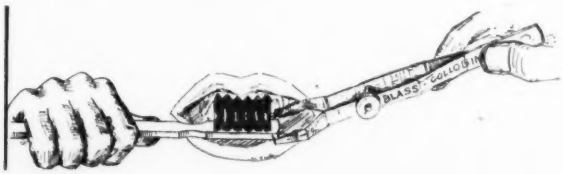
Brushing practice by the patient with observation and correction.

To correct the patient's movements and to control them, the control device (see figure) is attached to the brush. The points of the device are attached to the brush head between the first and second tuft of bristles and they are tightened by turning the thumb-screw. For purposes of trial an Ivory No. 1 matrix retainer may be used in the same manner.

The instructions for brushing are repeated verbally and the patient is asked to brush one area. By holding the control device, any errors attempted by the patient may be corrected by repositioning, pressing, pumping or pulling the brush in the proper manner. This control is transferred to the patient's hand and arm to create the muscle and nerve sensation necessary for guiding his movements and for letting him learn proper brushing massage.

Leaving the control device in place, the patient is checked on by letting him brush without guidance. The defects in his execution are diagnosed and the sources of his difficulties and errors shown him. Remedial suggestion is provided by use of the control device. He is encouraged by having the visible, beneficial effects on the circulation as inferred from the tissue blanching pointed out to him. Repeated explanations make the objectives of toothbrushing massage clearer and stimulate improvement in precision. The patient who understands and appreciates the benefits of proper toothbrushing and achieves the basic muscle-nerve adaptations is unlikely to lose interest in the procedure. Changes in technique or decrease in efficiency are corrected at future sessions when further supervision, instruction and encouragement are provided.

4 East 41st Street



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CASE REPORT—CORRECTION OF AN OPEN BITE (Non Occlusion), BY MEANS OF SELECTIVE GRINDING

JOSEPH FEINSILVER, D.D.S., *New York, N. Y.*

The patient, Corporal....., reported to sick call at a U. S. Army Dental Dispensary, on May 18, 1945.

The patient complained of pain along the gingival margins, intense when eating spicy foods. He also complained of spontaneous bleeding. Examination disclosed necrotic areas interproximally, between the lower anterior teeth, and a fetid mouth odor. Calculus was abundant throughout the mouth.

The patient had an open bite with contact between the second and third molars on the right side, and between the upper second and third molars and the lower second molar on the left side. The distance between the upper and lower anterior teeth was ten mm. (see fig. 1).

Fig. 1—Before selective grinding, bite open 10 mm.

Roentgenographic as well as clinical examination revealed advanced periodontoclasia of the lower anterior teeth.

A diagnosis was made of chronic ulcerative necrotizing gingivitis (Vincent's infection), with an acute exacerbation. The loss of gingival tissue and the periodontoclasia around the lower anteriors indicated the chronicity of the inflammation.

In addition to the immediate symptoms of the ulcerative necrotizing gingivitis, the patient complained that his open bite interfered with his speech. This was quite evident since he lisped. He said he could not eat solid foods such as meats, that his jaw always felt tired and that he knew that this malocclusion made him appear disfigured.

Previous history indicated that he had tried to have the open bite corrected. He was hospitalized in January 1942. During his hospitalization, casts were made and roentgenographs were taken. He was told that nothing could be done.

RESULTS

The treatment of the ulcerative necrotizing gingivitis consisted of the use of hydrogen peroxide by the patient and chromic acid at the dental dispensary. A complete scaling was given to remove deposits on the teeth.

When the clinical symptoms of the ulcerative necrotizing gingivitis had disappeared (four days), correction of the nonocclusion was started. The following procedures were carried out:

1. Removal of the upper and lower right third molars and the upper left third molar.
2. Pulpotomy and root therapy on the lingual canals of the upper right first and second molars.
3. Root therapy on the upper left first molar and pulpotomy on the upper left second molar.
4. Selective grinding of all teeth that interfered with proper occlusion thus all teeth were brought into contact except:
   The upper right central and cuspid
   The upper left central
   The lower anteriors

The open bite was reduced from ten mm. originally to four mm. (see fig. 2).

TREATMENT

1. Acute symptoms of the ulcerative necrotizing gingivitis have disappeared.
2. His lisp has been eliminated.

Fig. 2—After treatment, note improvement in tissue tone and bite closure.

3. He can masticate any food on his posterior teeth; and although he does not have contact on his anterior teeth, he can use them now to bite most foods.

4. He seems to have more power in his muscles of mastication.

5. His mandible feels more at ease; the tired feeling is gone.

6. His appearance has so improved that his friends constantly call attention to this improvement. His facial muscles have lost their tenseness.

CONCLUSIONS

The results that can be obtained by means of selective grinding are evident from this report. It was necessary to devitalize the above mentioned teeth in order to carry out the selective grinding. This regime is necessary only in very few cases.

It is hoped that the anterior teeth will eventually meet, perhaps by the use of some orthodontic appliance. Most of all, an unhappy individual has been turned into a happy one, who can now look forward to life as a normal human being!

150 West 58th Street

BURNING OF THE LIPS*

***To the Editor:*—A 63 year old white woman complains of burning and dryness of the lips and extreme nervousness. Physical examination shows considerable dryness of the lining of the lips with several areas suggesting small petechial hemorrhages with a suggestion of formation of bullae. Once during a period of four months' observation she had a shower of petechiae all over the body. Investigation at that time showed normal platelet count, bleeding time, coagulation time, hematocrit reading and complete blood cell count. She responded to a course of "rutorbin" (rutin and ascorbic acid in proportion 1:5). However, the lip findings have not changed. She has been treated with prolonged high vitamin B dosage both parenterally and orally and nicotinamide without symptomatic relief. The antihistaminic drugs have been tried both orally and locally without benefit. Allergy diets have also been used without benefit. There are some definite neurotic trends in this patient, and she probably has a mild psychoneurosis. However, the fixation of complaints of the lips is puzzling. Please suggest diagnosis and treatment.**

M.D., Texas.

ANSWER.—From the description given, the main complaint of this patient seems to be the burning of the lips. One would think of a psychogenic basis for her complaint. The burning of the lips probably corresponds to the more frequently seen burning of the tongue, commonly called glossodynia. As stated by Sulzberger and Zaidens (*M. Clin. North America,* 32:669-685 [May] 1948), these patients often suffer from cancerophobia. For some unknown reason, this condition occurs most frequently in women, and usually about the time of menopause.

Alvarez (*Postgrad. Med.* 4:96-101 [Aug.] 1948) believes that burning in the mouth without any local symptoms is sometimes due to a little stroke. This symptom is commonly seen in the cases of women around the age of 50.

The petechiae seen at one time probably are part of a general petechial eruption. These changes do not seem to bear any relationship to the burning, except that the dryness may have been a factor in localizing her complaints. A consultation with a dermatologist might be indicated to exclude the possibility that this woman is suffering from some specific dermatologic condition such as lichen planus of the lip.

Therapeutically, these patients are a difficult problem. One should investigate the psychologic factors. General supportive measures, iron, liver extract and vitamins are often prescribed, but are usually not of particular help. This patient probably will need consultation with a psychiatrist.

* From J.A.M.A.: 139:553, Feb. 19, 1949.

BOOK REVIEWS

The Child in Health and Disease. By Clifford G. Crulee, M.D., and R. Cannon Eley, M.D., Baltimore, Md. Williams & Wilkins, 1948. 1,066 p. $12.00.

The emphasis on investigation in medical science in the last few years has led to an attitude of indifference or at least to a feeling of complacency whenever the practical side of pediatrics came to the fore. We are prone to forget that the value of medical investigations depends upon its practicable bedside application as the final test of its usefulness. We are now confronted with a situation which calls for correction. Medical science has outrun its art or clinical application and so we find ourselves without sufficient practitioners trained to meet the needs of our children. This necessitates not only the proper training of our medical students and physicians, but the dignification of their position in the teamwork that is so necessary for a maximum success. It is with these thoughts that the editors offer a new textbook in pediatrics with the hope that it may be of use to the students in our medical schools and to the practitioners who go into our homes.

The chapters comprise: General Considerations, Nutrition, The Newborn and Prematurity, Communicable Diseases, Acute Infections, Chronic Infections, The Circulatory System Including the Blood, Spleen and Lymph Nodes, Blood and Lymph, The Respiratory System, The Gastro-intestinal Tract, The Genito-urinary Tract, Diseases of the Nervous System Including Mental Deficiency and Psychiatric Disturbances, The Muscles, Bones, and Joints, Allergy, Eczema, and Diseases of the Skin, The Endocrines, Abnormal Endocrine States, Obesity, Dwarfism, The Eye, Adolescence, Surgical Conditions and Surgical Principles in Pediatrics and Miscellaneous Subjects. All aspects of pediatrics are included. It is a veritable encyclopedia of the newer knowledge of infants and children in health and in disease. It is of inestimable value in the everyday practice of medicine.

I. NEWTON KUGELMASS

Aids to Diagnosis and Treatment of Diseases of Children. By F. M. B. Allen, Baltimore, Md. Williams & Wilkins, 1948. 268 p. $2.00.

This practical text has been completely revised, much of it re-written and some of it condensed. Many of the original clinical descriptions by the author of the early editions have been largely retained in view of their merit; but recent advances, particularly as regards erythroblastosis, sulphonamides and penicillin have been introduced. As in previous editions, particular attention has been given to the section on infant hygiene and feeding, and the premature infant; the chapter on infectious fevers has been completely redrafted and brought up to date. The results of recent advances have been included throughout and much redundant text has been eliminated.

I. NEWTON KUGELMASS

A Comprehensive Review of Dentistry. By Vincent R. Trapozzano, D.D.S., F.A.D.P. Philadelphia, Pa. W. B. Saunders Co., 1949. 661 p. $6.50.

This book has a twofold purpose: first, to serve as a concise, authoritative guide for those preparing for dental state board examinations in the various subjects covered; and second, to serve as a general review for the undergraduate student and the general practitioner. The need for a book of this kind has long been apparent. The material in each chapter was prepared so as to present a concise, orderly review of the subject. The object has been to avoid a book of encyclopedic proportions and yet to have sufficient material without great gaps in sequence.

Descriptions of technical procedures have largely been omitted. The student's background knowledge should make him sufficiently acquainted with technical procedures to meet the requirements of examination. Much is to be said for and against the question and answer technic used. The results obtained by the armed services in training large numbers of men quickly and efficiently, stamp this as at least a successful procedure. In some parts of the text certain questions and answers are obviously a repetition of others and were included merely to give continuity to the particular subject covered in the chapter. Here and there a statement will be found which to some extent may conflict with another statement on the same topic in another chapter and by a different contributor. Any book written by a number of contributors is certain to entail differences of opinion. Some such differences were included with the idea of allowing the reader to choose whichever authority he prefers. I believe this idea to be consistent with the thought that it is the examiner's responsibility to know and understand the differences of opinion concerning the answer to any specific question he may ask.

I. NEWTON KUGELMASS

ANNOUNCEMENTS

AMERICAN ACADEMY OF DENTAL MEDICINE

Third Annual Meeting

Saturday and Sunday, June 4 and 5, 1949

at

Statler Hotel—Seventh Avenue at 32nd Street, New York City

Program

Saturday, June 4

10 A.M.—Business Meeting
12:30 P.M.—Luncheon
Presentation of Honorary Membership to Joseph F. Volker, D.D.S., Dean, University of Alabama Dental School, formerly Dean, Tufts College Dental School.
2 P.M.—Scientific Session

SYMPOSIUM ON PSYCHOSOMATICS

Psychosomatics in Dentistry for Children

Essayist

Harold Kane Addelston, D.D.S., Associate Professor and Chairman of the Department of Dentistry for Children, New York University College of Dentistry, President of the New York State Society of Dentistry for Children, Institute of Clinical Oral Pathology, American Academy of Dental Medicine.

Discussor

Sidney Tarachow, M.D., Med. Sc.D., Resident Neurologist Mt. Sinai Hospital, N. Y. C., '34-'36, Senior Clinical Assistant Psychiatrist Mt. Sinai Hospital, N. Y. C., '37-'42, Postgraduate Instructor First District Dental Society.

Psychosomatics in Dentistry

Essayist

Renato J. Almansi, M.D., Diplomate American Board in Psychiatry, Neuropsychiatrist Beth Israel Hospital, Assistant Attending Neuropsychiatrist Goldwater Memorial Hospital, Introduced Electroshock therapy in this country in 1939.

Discussor

Joseph S. Landa, D.D.S., Clinical Professor of Denture Prosthesis, New York University College of Dentistry, Attending Prosthodontist Polyclinic Hospital and Medical School, Author "Practical Full Denture Prosthesis," American Academy of Dental Medicine.

Psychosomatics in Oral Medicine

Essayist

Flanders Dunbar, M.D., Ph.D., Med. Sc.D., B.D., American Psychiatric Society, Associate in Psychiatry Presbyterian Hospital, American Psychoanalytic Association, Author "Psychosomatic Diagnosis" and others.

Discussor

Sol J. Ewen, D.D.S., Research Assistant Columbia University Dental School.

Sunday, June 5

10 A.M.—Business Meeting
12:30 P.M.—Luncheon
Academy Awards
2 P.M.—Scientific Session

ROUND TABLE DISCUSSIONS

1. Lester W. Burket, D.D.S., M.D., *Oral Manifestations of Systemic Disease.*
Director Postgraduate Division School of Dentistry, University of Pennsylvania, Professor of Oral Medicine, American Academy of Dental Medicine, Author "Oral Medicine."
2. Earl O. Butcher, Ph.D., *Anatomy of the Head and Neck.*
Professor and Chairman Department of Anatomy, New York University College of Dentistry and Graduate School of Arts and Science New York University, American Association of Anatomists, Trustee Mt. Desert Island Biologic Laboratory.

3. Louis Alexander Cohn, D.D.S., *Mouth Rehabilitation.*
   Assistant Clinical Professor of Dentistry, Columbia University Dental School, American Academy of Periodontology, Chairman Prosthodontia Section First District Dental Society.
4. Harold Klein, D.D.S., *Dentistry for Children.*
   Assistant Professor of Children's Dentistry, New York University College of Dentistry, American Academy of Dental Medicine.
5. Herbert I. Margolis, D.D.S., *Orthodontics.*
   Professor of Graduate Orthodontics, Tufts College Dental School, President Massachusetts Dental Society, Vice President American Academy of Dental Science, Attendant Massachusetts State Hospital School for Crippled Children.
6. S. Leonard Rosenthal, D.D.S., *Management of the Periodontal Case.*
   Assistant Professor of Periodontia Temple University School of Dentistry, Diplomate American Board of Periodontology, American Academy of Periodontology, American Academy of Dental Medicine.
7. Rieva Rosh, M.D., *Oral Cancer.*
   Assistant Professor of Radiology, New York University College of Medicine, Fellow American College of Radiology, Fellow Academy of Medicine, American Radium Society.
8. Harry Roth, B.S., D.D.S., *Nutrition.*
   Assistant Professor of Periodontia, New York University College of Dentistry, Diplomate American Board of Periodontology, American Academy of Dental Medicine, Chairman Pathodontia Section First District Dental Society.
9. Harry M. Seldin, D.D.S., *Mandibular Resection, The Use of Sclerosing Solutions.*
   Fellow International College of Anesthetists, Fellow International College of Dentists, Diplomate American Society of Oral Surgeons, Consultant Harlem, Peekskill Hospitals, New York Cancer Institute, Author "Practical Anesthesia for Dental and Oral Surgery."
10. *Combined Prosthetic and Surgical Procedures in Plastic Maxillofacial Surgery.*
    Walter H. Wright, Ph.D., D.D.S., Dean New York University College of Dentistry, Fellow American College of Dentists, Professor and Chairman Department of Prosthetics New York University College of Dentistry.
    John M. Converse, M.D., Chief Plastic Surgery Division, New York University Department of Surgery and Bellevue Hospital, Surgeon in charge of Plastic Surgery Clinic, Manhattan Eye, Ear and Throat Hospital, Co-author "The Surgical Treatment of Facial Injuries."
    Frank E. Jeffreys, B.S., D.D.S., Commander Dental Corps, United States Navy, New York University College of Dentistry Research in Prosthesis.
    Ross M. Campbell, M.D., Resident in Surgery, Hospital for Special Surgery, Fellow, Plastic Surgery Division, Department of Surgery New York University, Bellevue Medical Center.

(Cut out and mail)

DR. LOUIS R. BURMAN
1235 Grand Concourse
New York 52, N. Y.

Dear Dr. Burman,

I will attend the Annual Meeting of the American Academy of Dental Medicine at the Statler Hotel on June 4 and 5, 1949.

Enclosed is my check for ten dollars for the two luncheons.*

Dr. .....

Address .....

.....

My first, second and third choice for the Round Table Discussions are ☐ ☐ ☐
(see program for table numbers)

Reserve hotel room for me Single ☐ Double ☐ for the following days.....

I will arrive.....

* Additional registration fee for non-members is $5.00.

Periodontia Postgraduate Courses at N. Y. U.

The following periodontia postgraduate courses have been announced for the Spring of 1949, at New York University College of Dentistry.

PERIODONTIA 124 (continuous, morning-afternoon)

This 90-hour course consists of a study of the following: etiology; pathology; diagnosis; prognosis of periodontal disease; equilibration of occlusion; gingival massage; instrumentation; conservative and radical treatment; acute necrotizing ulcerative gingivitis (Vincent's infection); drugs; diet; maintenance of mouth health; prevention, etc.

Fifteen, six-hour sessions, daily, 9.00 a.m. to 4.00 p.m., June 5 to June 24, 1949. Tuition $300.00. Books $19.50. Instruments approximately $68.00. Rental fee $1.00.

PERIODONTIA 122 (continuous, daily, one year)

This one-year course consists of lectures, motion pictures, models, demonstrations with clinical practice in all phases of periodontal diagnosis and treatment, including conservative and radical techniques and equilibration of occlusion. Each registrant must acquire sufficient clinical experience to prove his skill in the handling of all phases of periodontal disease. He is also required to prepare an original thesis on a phase of the subject, this to be presented before the class for discussion. Courses in periodontia will be under the supervision of Professor Samuel C. Miller.

One academic year, daily 9.00 a.m. to 4.00 p.m., September 20, 1948, to May 27, 1949. Limited to 4. Tuition $1,000.00. Books $26.00. Instruments approximately $90.00. Rental fee $1.00.

Apply to:

Director, Postgraduate Division
NEW YORK UNIVERSITY, COLLEGE OF DENTISTRY
209 East 23rd Street
New York City, N. Y.

Annual Dental Medicine Seminar

The Sixth Annual Seminar for the Study and Practice of Dental Medicine at Palm Springs, California will follow the American Dental Association Convention set for San Francisco October 17-21. The dates set for the Seminar, October 23-28, are conveniently arranged to enable those persons interested to attend both important gatherings.

Applications are currently accepted, and inasmuch as facilities are limited, early arrangements should be made by contacting Miss Marion G. Lewis, Executive Secretary, 1618 Ninth Avenue, San Francisco 22, California.

Seven outstanding speakers will discuss and compare the most recent discoveries in dentistry and the related fields of medicine and biology. They include: Arthur C. Curtis, M.D., Professor and Director of the Department of Dermatology and Syphilology at the University of Michigan; Wilton Marion Krogman, Ph.B., M.A., Professor of Physical Anthropology, University of Pennsylvania; Seymour M. Farber, M.D., Assistant Clinical Professor of Medicine, University of California Medical School; Balint Orban, M.D., D.D.S., professor at the University of Illinois; D. Harold Copp, M.D., who is collaborating with the Division of Dental Medicine at the University of California; Francis A. Arnold, Jr., B.S., D.D.S., Sr. Dental Surgeon, U.S.P.H.S.; and Paul Popenoe, Sc.D., Director of the American Institute of Family Relations in Los Angeles.

President of the Seminar is Dr. Hermann Becks, chairman of the Division of Dental Medicine, College of Dentistry, University of California.

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